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THE MARYLAND MANAGEMENT PLAN AND THE SHAD FISHERY

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July, 1944

Educational Series, No. 5

Department of Research and Education

Solomons Island, Maryland

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THE MARYLAND MANAGEMENT PLAN AND THE SHAD FISHERY[1]

The first article of this series outlined in a general way the aims, practicability and validity of fishery management in Maryland, while the second showed the direct benefits of such procedures to the Maryland rock fishery. The purpose of this paper is to set forth the specific effects and benefits of the Plan to the shad fishery of the State. Before discussing the principles of management and conservation as applied to the shad in Maryland, it would be well to survey briefly the past and present status of the industry.

Records from the U. S. Fish and Wildlife Service have shown a steady downward trend in Maryland shad catches for the fifty years between 1890 and 1940. With only a few short periods of partial recovery, a continuous decrease from 7,128,000 pounds to 445,000 pounds has taken place. The value of this poundage has dropped from over six million dollars a year to about one half million dollars a year.

Past efforts to restore the shad runs in Maryland have met with failure. Probably the most striking are the hatchery operations which have been conducted since 1876. From five million to one hundred fifty million shad fry have been released each year in the waters of Maryland, and no recognizable results have been shown in later catches. Hatcheries have not effected restoration of this fishery nor, for that matter, have they noticeably stemmed depletion. Apparently, as a single factor, they can not be depended upon to restore this valuable resource. Included among the other measures which have been unsuccessful are shortened seasons, shortened gears, and prohibition of industrial pollution, as indicated by the continual decline cited above.

The answer lies in a very simple principle which applies to all living things. That is the *protection and preservation of a large enough supply of brood stock.* In raising cattle, or pigs, or chickens, parent animals are necessary to have offspring. Obviously, the more brood animals there are the greater number of offspring normally expected. Ex-

(1) This is the third of a series of four articles explaining the Maryland Fishery Management Plan.

actly the same principle applies to the production of fish. To have increased runs of shad, it is necessary to have more spawning fish.

The means for obtaining more spawning fish is a problem which can be approached from a number of angles. Restrictions on the length of the fishing season, the size of the fish, the type of gear, or mesh of net have been used in many places to protect fish. All such plans have one common fault—they work a hardship on the fisherman by decreasing the efficiency of his efforts. He has to work just as hard for fewer fish. It must be remembered that the fisherman is dependent for his livelihood upon the most profitable operation of his gear. Generations of practical knowledge and experience lie behind his methods of fishing, and an attempt to change such time-tested procedures would be utterly impractical.

Years of investigation have shown that there are but two major sources of depletion in Maryland's shad fishery. One is death from natural causes, enemies, injuries, etc.; the other is capture in large numbers by the fisherman. The first, natural mortality, is of relatively small importance in fish of marketable size, and is a factor over which man or law can have no effect. *The principal cause of depletion has been the result of overfishing.* This, however, can be remedied by the fishermen themselves.

Maryland's watermen have recognized this problem of overfishing. The Management Plan is their answer to the threat of irreparable damage to Maryland's fishery resources. Operating on the principle of reduced fishing which has been so effective in restoring shad in the Hudson River, the Plan is designed to protect both the fish and the fisherman. By permitting sufficient brood stock to escape, future runs will be assured, and by holding licenses at a constant level, overfishing will be prevented. Regular, full-time fishermen will be assured a constant, increased income, and will be protected from glutted-markets, low prices, and depletions associated with unrestricted overfishing, together with the even greater, *but less obvious,* problem of reduced brood stock.

Conditions at the present time point toward the restoration of the shad fishery in a more encouraging way than at any time since the decline in yields started about a half century ago. For, in addition to the restrictions on licensing inherent in the Plan, the economic situation growing out of the war has caused a further reduction in the number of fishermen operating, with the result that spawning reserves are being

built up at a comparatively rapid rate and in most encouraging numbers. Bear in mind in this connection, that there is convincing precedent to show that upbuilding of brood reserve is followed by corresponding increases in pounds of fish caught.

Biologists from the U. S. Fish and Wildlife Service and the Maryland Department of Research and Education have carried on cooperative shad scale collections for a number of years. Each time a shad enters fresh water to spawn, a distinct scar-like mark is formed around the edge of the scale. As the fish grows, the scale increases in size, and more material is laid down around the scar. Thus the scale bears a permanent record of the life history of the fish. Since the number of these scale markings corresponds to the number of times the shad has spawned, it is possible to determine what percentage of a run has escaped the nets in previous years. The examination of thousands of scales during the past several years has shown a decided increase in the number of fish returning the second or third time to spawn, indicating that already there has been a much greater survival of brood stock. That is to say, there is definite reason to believe that the shad fishery is on its way back.

During the first World War, a similar reduction in fishing allowed more shad to spawn, and produced large runs for a short time. However, unrestricted post-war fishing soon wiped out all increases, and, as might be expected, the yields sank steadily with the result that an all-time low was reached within a quarter of a century.

The runs of shad have nearly doubled in the three years that the Maryland Plan has been operating. This season fishermen of the Bay reported the greatest runs of shad in many years. Surely this increase in a valuable source of food and income should not be allowed to fall again to pre-war level, but, to the contrary, should be protected and the brood stock maintained by sound conservation until the former high levels of production are reached. There need be *no decrease in the number of fishermen or in the extent of their gears* to effect this recovery. It will not be necessary to pass laws that will impose further restrictions, and no fisherman will have to stop fishing because he is unable to make a good living for himself and his family. To the contrary, the number of fishermen and the amount of gear *can be increased* as the runs of fish increase. By balancing the quantity of fish taken from the water with the amount of brood stock needed to maintain constant large runs, the fishermen will be assured social and economic stability for themselves, their families, and their communities.